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ABSTRACT

This collection of speeches views long-range planning and program evaluation as the real output of the institutional research practitioner. Long-range planning is discussed from different approaches, methods, technologies, and philosophies. Topics covered are: (1) long- and short-range planning policies and procedures; (2) institutional research; (3) attrition studies; (4) retention/attrition studies; (5) the unofficial withdrawal; (6) a study of the 1973 graduation class with special emphasis on graduation, retention, and attrition of students; (7) followup studies; (8) NCHEMS costing and data management systems as an information exchange procedure; (9) implementing NCHEMS information exchange procedures; and (10) a technique for identifying disparities in faculty salaries. (Author/KE)

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# LONG RANGE PLANNING, ATTRITION/RETENTION AND GRADUATE FOLLOW-UP STUDIES

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## Selected Proceedings

## Second Annual Meeting of the North Carolina Association For Institutional Research

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**Charles I. Brown, Editor**

**1974** **Winston-Salem** **1974**

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Requests for copies of titles still available should be directed to Robert M. Ussery, Director, Institutional Research, East Carolina University, Greenville, N. C. 27834

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1974 - SECOND ANNUAL MEETING - 1974

NORTH CAROLINA ASSOCIATION for INSTITUTIONAL RESEARCH

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LONG RANGE PLANNING, ATTRITION/RETENTION

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## PREFACE AND ACKNOWLEDGEMENTS

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At its second annual meeting the North Carolina Association for Institutional Research has again lived up to the expectancy that the Association would prove to be a viable, if not catalytic force, in the improvement of the educational enterprise in the state as a reading of these papers on Long Range Planning, Attrition/Retention, and Graduate Follow-Up Studies, etc., will attest. However, I must confess that even though much may and will be learned from these inclusions, these pages fail to capture in full measure the air of informality that enhanced two days of NCAIR information sharing and exchange.

Along with the presentation of the Proceedings I would also like to acknowledge and underscore my indebtedness to the authors of the selections included in the 1974 Proceedings who were kind enough to resubmit a manuscript of their thoughts when the first set of papers in my possession were purloined.

Charles I. Brown
Fayetteville State University
May, 1975

PRESIDENTIAL ADDRESS AND INVITED PAPERS

* * * * * * *

# A RATIONALE FOR THE SECOND ANNUAL MEETING

Robert E. Reiman

Appalachian State University

Good afternoon--and welcome to Winston-Salem and to the second annual meeting of our growing organization.

Your program committee (Tom Stafford, Edwin Chapman, John Meakins, Wanda Fisher, and William Eagles) has worked diligently to prepare what we hope--since this is our second meeting--is an agenda that will be twice as stimulating as that of our fine meeting last year. Good things must come in "twos". As we were driving into Winston-Salem this morning we noticed on the outskirts of town a large billboard with this enjoinder, "In 1791 George Washington spent two nights in Winston-Salem. Shouldn't you?" So, I encourage each of you to heed this appeal, even if it is from the local Chamber of Commerce--but do it so that you can stay on for the meetings beginning tomorrow of the North Carolina Association of Colleges and Universities. I have seen a copy of the program and I can assure you that the issues to be discussed will be both relevant and timely for institutional researchers.

Most of you have scanned your meeting agenda by now, and I am sure you are wondering why the heavy emphasis on long-range planning, when most of us, particularly those from the two and four-year public institutions, have just submitted an iteration of our long-range plans. That's precisely the point; your program committee reasoned that probably the best time to have a meaningful interchange pertinent to planning is now. We have all used different approaches, methods, technologies, and philosophies in the formulation of our current plans. Let us engage now in an exchange--while it is still fresh in our minds--of our successes, our failures, our innermost feelings about how planning "ought" to be done. If you have looked over the wares on the display table out front, you have surely noticed that among the plans exhibited there is as much diversity as there is among the institutions (and the institutional researchers) themselves.

This is as it should be. However, each planning document, whether large or small, required a significant amount of effort to create it; what we hope to do at this meeting is to recapture some of that effort and profit from each other's experiences.

Many of us feel that long-range planning, (and program evaluation as well), are the ultimate real output of the institu-

tional research practitioner--everything else he does is only prelude.

You might also note that your program committee has come up with a somewhat unusual approach to concurrent sessions. Two of the afternoon sessions are repeated tomorrow morning, but with different presentors. It is felt that this approach offers considerably greater in-depth exploration of a topic and permits more members to participate. Further, it is hoped that this will offer more insight as to how institutional research can be greatly varied within the same general topic.

In my opening remarks last year I mentioned briefly the urgency and the press of time in regard to the work of the institutional research practitioner, and the need to share. The events of the past twelve months have only served to reinforce that view! So, today, at our second meeting, we do indeed need to double our concern for each other's work and double our attentiveness to the problems of our trade. Our business is good, the customers keep on coming--let's enjoy a good meeting and try to help each other give those customers their money's worth!

Thank you

# LONG AND SHORT RANGE PLANNING POLICIES AND PROCEDURES at the NORTH CAROLINA COMMUNITY COLLEGE SYSTEM LEVEL*

Terrence A. Tollefson

Department of Communit, Colleges

*Note: Speaking informally and without a script at NCAIR-Winston-Salem, Terry Tollefson was prevailed upon to recapture the main thrust of his presentation for these Proceedings. This he has done with clarity and succinctness in the enumerated statements below.

1. The North Carolina Community College System is involved in a variety of planning activities, ranging from federally required desegregation and affirmative action planning to pre-budget planning and assisting local institutions in their own long-range planning efforts.

2. The philosophy adopted by the State Board of Education is that local initiative should be encouraged and preserved at the level of technical institutes and community colleges. Thus, the State Board adopts broad policy statements, which may be augmented by administrative procedures issued by the State President.

3. In accordance with #2 above, the Department of Community Colleges developed a set of procedures and data processing capabilities which could be used (or modified) by local institutions to:

   (a) survey personnel needs of local employers for graduates of technical institutes and community college programs;

   (b) survey area high school seniors concerning what educational programs are of interest to them; and

   (c) survey former students to determine what they liked and disliked about their educational experiences, what their jobs are and how much they are earning. The State Board later adopted a policy requiring each institution to develop a long-range plan, but the institutions were free to depart from suggested procedures as they wished.

4. Other planning documents developed by the Department of Community Colleges, or by outside consultants with staff assistance from our department, address statewide needs.

5. The most definitive short-range plans are probably those contained in (pre-budget) program plans and budgets. These plans

should increasingly reflect both institutional long-range plans and state-developed long-range plans in the future, as improved local-state articulation occurs.

# INSTITUTIONAL RESEARCH: THE SPARKPLUG OF ACADEMIC PROGRESS

Robert Williams, Jr.

University of North Carolina - General Administration

Let me say at the outset that as far as the importance of Institutional Research is concerned, I am a true believer. I have worked one way or another with most of you present here and I have had occasion to see the work of almost all of you in public senior institutions. During the early days of institutional research in North Carolina, I became an interloper at your meetings and the seminars designed for you in an effort to make the best use, oh my own campus, of what I thought was the tremendous potential of institutional research. You were kind enough to allow me the courtesy of temporary fraternity, and I appreciate it. It is not always so. (The Texan who went to Alaska found no such kindly welcome.) It's a good thing you didn't require tests for my participation in your work. I wouldn't have known a multiple regression equation from a PCS crossover. One by one and as a group you have convinced me of your tremendous value in statewide planning and in internal institutional management. I went through the business of seeing an office of institutional research come to a campus where no such identifiable function had been present before. I became convinced almost at once of the value of having a body of carefully developed fact upon which to base a decision and, what is sometimes of greater importance, the same body of fact to assure all of those affected by the decision that it rested on reasonable assumptions. It is infinitely better than flying without instruments--it's quicker; it's safer. I've tried it both ways and, as the pretty girl in the Burger King television commercials says, "I'd rather have it your way".

Institutional research was important to me as a campus academic administrator because it improved the quality of decision making; it widened and strengthened the base for implementation of policy; and thirdly, it allowed me to support and encourage the sort of academic governance I philosophically prefer.

Much of the factual foundation for academic decision making is now provided by institutional research officers. The quality and the credibility of decisions rests in no small measure upon your shoulders. But let me suggest to you that the credibility also depends greatly on the relationship between the institutional research office and the administrator who makes and influences decisions and policies. I would emphasize that the maximum effective use of institutional research is really possible only when the administrator and the institutional research officer maintain a scrupulous separation of their function. The poet Robert Frost's advice as to good fences applies in this case. The institutional research director and his staff need to be free from the responsi-

bility of decision making and the persons who are charged with the necessity for decision making should be furnished the necessary data free from any preconceived notions incident to the decisions that must be made. The institutional research office and the academic decision makers can only function well together if they are careful to establish clearly the delineation of their roles at the outset, and are agreed as to what part each is to play in the process that begins with a problem and ends with a solution to that problem. Both should agree as to the nature of the problem before they move toward a possible solution. They should decide together what information is necessary to make a decision, whether it is available, easily generated or will take extensive effort. The institutional researcher should gather the facts and make as much of an analysis and synthesis of the facts as he can and provide information that will allow for a decision rather than point to a particular one. The more alternatives his data provides the more valuable it is. There should not be the slightest suggestion that the facts were gathered to support a particular viewpoint given in advance to the institutional researcher. The point is not at all that the institutional researcher is not entirely capable of making decisions, but rather that the integrity of the decision making process is more important. Once a decision is made, all of the resources of institutional research can be used to mobilize support for implementation. A decision will more readily appear reasonable and logical if there has been a careful definition of the problem and the development of a body of related facts by a person or agency other than the decision maker. Once a decision is made, it needs to be fully communicated and not simply by directive alone. All of the work of institutional research should be made known. Persons who are affected by a decision are, in most cases, entitled to know who helped to make it and on what factual basis it rests. Their support of the decision will rest in large measure on their faith in the facts upon which it was based. More and more this depends on their belief in the integrity and neutrality of institutional research.

A functioning office of institutional research makes the form of academic governance most often referred to as "shared authority" more viable. I believe that an institution's faculty should be very much involved in policy making and in some areas, like curriculum, they should play a leading role. The faculty will always have an important impact on the policies and operations of institutions of higher education. The relevant task is not to affirm or deny the faculty's ability to participate in decision making, but to create an environment that will promote the most constructive exercise of this influence.

The faculty is going to make their influence felt by making decisions or by choosing to support or not support those that have been made. The quality of that influence and its force for institutional good is largely dependent on the work that you and your colleagues do. The factual basis for decision making improves the

quality of decisions; it strengthens the support of policies and it allows the academic administrator the assurance and comfort he needs in sharing the making of policy with the faculty. The assurance comes from knowing that he and the faculty have reliable information to determine a course of action. It is not a good feeling to bid for faculty support for a decision made on intuition or the flip of a coin. Such a practice encourages others to oppose or to suggest another course, perhaps, based on no assumption at all. This is often disastrous for it is an unfortunate fact of human nature that many people, once they have taken a position, however shaky its basis, will not readily abandon it.

Because of the function performed by you, ladies and gentlemen, it is possible, except in matters of extreme urgency, to present the facts related to a problem before anybody has a chance to urge a decision on what they <u>think</u> they know to be the facts. With the facts, a reasonable course of action can more often be determined and assured of reasonable support. Without them, an administrator must sometimes enlist support on the basis of partially-sighted, if not blind trust, or at the expense of some promise of tradeoff he'd rather not or should not make.

In other ways, institutional research helps to facilitate "shared authority". I think it is the duty of the administration to make a conscious effort to assure a logical sequence in making and implementing even those decisions which belong primarily to the faculty. This cannot so easily be done without institutional research. (1) The administration must assure the use of appropriate data. This would be a difficult task for Provost Morrow without the help of Lillian Lehman. (2) All of those concerned should recognize the consequences of decisions (sometimes this is of vital importance; I can recall a near disaster that I probably couldn't have avoided without Bob Ussery). The administration must maintain proper communications concerning decisions and the assumptions upon which they are based. The new Vice Chancellor at Appalachian will need the support of Bob Reiman for this task. Finally, a system should provide for regular appraisal, adjustment and change. Institutional research can provide this system.

I have seen the role of institutional research grow in importance and I expect to see that role strengthened and broadened. Because institutional research has been of such great help to me, I am glad to see that the profession flourishes. It was not always flourishing or even understood as a profession.

On some campuses, some of you were, at first, the person on whom all those damned questionnaires could be pushed off; but, very soon, you moved toward the center of activity on the campus as a valuable staff resource. The number of studies many of you have made, without prompting and on your own, have been of tremendous value on and off your campuses. There is need for more of this in areas like enrollment projection technique, student and staff char-

acteristics and graduate follow-up. There are few limits to the value of your work in the years ahead.

Institutional research can provide superior insights into the complex process in which the production and distribution of knowledge take place.

Never before has the need been more clearly felt for effective and comprehensive systems of long-range planning, management and decision making for higher education. Institutional research is vital for all of these systems.

Higher education has been a growth industry by any test of economic significance or social magnitude--invested capital, expenditures or number of persons involved. Enrollments have gone up and expenditures have gone up and represent, I believe, over 2 percent of the GNP.

Higher education is heavily dependent upon human resource inputs (intellectual talents and creative ability) and, therefore, might be expected to increase in relative cost as technological improvements are introduced into other sectors of society; and expenditures, as a percentage of the GNP, can be expected to rise.

The historic response to this situation has been that universities simply need more money, and more money has been provided in recent years in generous amounts. Now, however, legislators, parents, donors, control boards and other public agencies are suggesting better management and closer accountability. Even the foundations are in retrenchment. McGeorge Bundy complained a few years ago that "the needs of higher education as conceived by deans and presidents strung end-to-end would go three times around the endowment of the Ford Foundation without pause for breath".

The application to institutions of higher education of the production-function concept of economic theory which relates inputs to outputs is being increasingly urged upon us. The kinds and quantities of input factors (classrooms, laboratories, libraries, professional skills of various levels and specialties) --all the things needed to create different types of learning environments can be defined and quantified. Models of educational delivery systems can be constructed for cost-benefit studies. Simulation models can be of great use in planning future courses of action. A relatively simple device like the Induced Course Load Matrix can plot the effects of changes in curriculum, resources and teaching patterns.

All during the sixties and up until the present, systems for colleges and universities have been suggested. NCHEMS at Wiche has been and continues to be in the vanguard of agencies striving to develop management information systems and analytic models for higher education. Planning programming-budgeting systems have been

suggested for higher education and the budget just completed for The University is in a modified program-budget format.

The movement is a logical one. The PPBS saw its greatest development in defense planning and the major programs of a university--instruction, research and public service are conceptually similar to problems of tactical and strategic missions of defense planning. Five-year plans for higher education are not too much unlike the estimates of future force structures of the armed services.

Institutional research is necessary for this changing environment of higher education. Most of my experience to date supports my belief that analytic techniques, including systems techniques, can be adapted to higher education and that they can and do sharpen judgments exercised by educational leaders. In a very important sense, those of you in the public senior institutions have added to the fabric which holds The University together and makes it operate effectively.

On October 15, the long-range plans from the 16 public institutions arrived in Chapel Hill. In just a few days now the comprehensive plan is scheduled for detailed review by the Planning, Policies and Programs Committee of the Board. They will report to the Board in early January and the plan will be presented to the Governor, the Advisory Budget Commission and the General Assembly at the earliest practicable date in 1975. This plan will declare the goals for The University for 1975-1980. The assumptions on which these goals are based will have been brought into sharper focus by the work you have done. Parts of the plan, already in place, like the Academic Program Inventory and the State Plan to Eliminate Racial Duality owe much to your efforts.

A decade ago, institutional research was an esoteric, little-known function that most institutions operated without. Now I think to do without you would be like removing the sparkplugs from the engine of academic progress.

## ATTRITION/RETENTION STUDIES

* * * * *

### ATTRITION STUDIES AT WESTERN PIEDMONT COMMUNITY COLLEGE

Edwin R. Chapman

Western Piedmont Community College

Western Piedmont Community College has conducted attrition studies annually for the past three years. Our studies were designed to discover information on five student items, viz. (1) present activity, (2) present salary, (3) relation of present work to education, (4) future educational plans, and (5) major reason for not continuing at Western Piedmont. Hopefully this information will enable us to both salvage some lost students and save future ones by attuning our courses or programs to student needs.

We perused our student records and identified the 1972-1973 attrition population of 733 students who had been enrolled at Western Piedmont for 12 or more credit hours and who then did not subsequently enroll during this period. A mail questionnaire was used to contact a 30% random sample of these former students. With N=220, only 75 or 34% were returned after two attempts were made to contact each one.

Responses to question 1 on present activity showed that 56% were employed full time, 9% were in the armed forces, 11% were neither employed nor students, and the remaining 24% were in various combinations of work and student situations.

Question 2 on weekly salaries revealed that most salaries were close to the median for the group. A comparison with our graduates showed that the graduates' average salary was 15% more than that of the attrition group.

Sixty-five percent of the drop-outs stated that their present job was not related to the courses they took here. Conversely, 35% said their work and courses were directly related.

Questions on future educational plans indicate that 50% plan to reenroll either at this college or elsewhere, while some 41% said future educational plans were unknown. Only 9% had no plans to continue their education.

The final area of questioning was designed to reveal the one major reason for students dropping out. The main reason given (47%) was personal or family situations. The next highest incidence of response (14%) was financial problems. A 12% response was received on both dissatisfaction with education and on military ser-

vice as the reason for discontinuance. Only 9% reported themselves in the category of ELMS (early leavers with marketable skills or learned enough to get a job). The lowest reported reason (5%) was for academic difficulties.

In addition to determining the total responses by percentages, we analyzed the responses by programs (majors). No clear pattern was found on this basis. In fact, regardless of program the students reported the chief reason for leaving school was either personal or family situations plus financial problems.

## SUMMARY AND CONCLUSIONS

The exact size, make-up, and a precise definition of an attrition (drop-out) population is difficult to establish. Other or additional methods are needed to increase the number of questionnaires returned. Validation methods are needed to increase the accuracy or definitive nature of reasons given for attrition. Additional comparisons of the drop-out group with the graduates are needed. Information from these studies is one facet needed as an input factor in processes of: program evaluation, future planning, recruiting, student characteristics, and institutional goal determination.

# RETENTION/ATTRITION STUDIES AT NORTH CAROLINA STATE UNIVERSITY

Thomas H. Stafford, Jr.

North Carolina State University

In recent years retention/attrition studies rates for entering freshmen have been of interest to researchers at North Carolina State University (NCSU). An initial longitudinal study (Council, 1972) indicated that approximately 41% of the 1966 entering freshman class graduated at NCSU within four years, and 53%, within six years. Most of the attrition occurred during the first two years with 22% of the class not returning to begin the second year and another 14% not returning to begin the third year of study. In addition, high school rank, first year cumulative grade-point average, and first year predicted grade-point average were highly related to graduation, which Scholastic Aptitude Test (SAT) scores were not.

A later study (Council, 1974) investigated graduation and attrition rates for black fresnmen who entered NCSU in 1969 and 1970. Although the number of black freshmen entering during these years is very small, their graduation rate after four (49%) and five (65%) years of study is slightly higher than that for all freshmen in the previous study. For black freshmen in this study, first year cumulative grade-point average was related to graduation, but high school rank, SAT scores, and first year predicted grade-point average were not. These studies suggest the need for further study, particularly with groups of students more recently entering NCSU.

The purpose of my presentation today is to describe the system which is being developed by the Department of Student Affairs Planning and Research to provide annual retention/attrition rates for categories of students entering NCSU, and to describe some initial results from this system.

Over a year ago we began to build a computerized retention data file for freshmen classes which had entered NCSU since the fall of 1970. The following information was included in the file for each student: sex, race, program of study, SAT scores, high school rank, first year cumulative grade-point average, freshmen predicted grade-point average, and retention status after fall registration in each semester subsequent to initial entry. Retention status included the following classifications: continuing, withdrawn, academically suspended, and graduation. Building of this file was completed by matching computerized admissions, registration, grade, and graduation files, and by far, represented the most time-consuming part of the project. Retention status for the fall, 1974 semester is being added to the data file now and

when completed, retention rate comparisons by sex, race, SAT scores, etc., over a four-year period will thus be available for the 1970 cohort and for shorter time periods for cohorts who entered after 1970.

We plan to expand this system to include lower and upper division transfer students and graduate students entering masters and doctoral programs in the fall of 1974. Initial retention rates will thus be available for these students in the fall of 1975.

It should be noted that this system has certain limitations. It cannot document exact reasons why students leave even though suspension and withdrawal categories are used for all students who do not continue. For example, students who are academically eligible to continue but who do not return may do so for a variety of reasons, none of which are collected in this system.

Secondly, there is no indication of what happens to a student after leaving the university. Of particular interest is whether or not the student transfers to another college or university to continue his/her education.

The system will provide, however, basic information about retention/attrition rates and the relationship of certain variables to retention for a wide variety of student categories. For example, one question of interest is whether or not SAT scores and high school rank are related to retention and eventual graduation for black freshmen who have entered NCSU since 1969. This information would have implications for admissions policies since these variables are used to determine admission.

In Table 1 some initial data from the system are shown. Annual retention rates through the fall of 1973 for freshman cohorts who entered NCSU in 1970 thru 1972 are presented by race and sex. Thus, of the 1,753 white males who entered NCSU in fall, 1970, 80.9% continued into the second year, 68.5% into the third, and 66% into the fourth. Retention rates in each year for white males who entered in 1971 and 1972 are very similar to those for 1970 entering white males. Retention rates for white females are very similar to those for white males initially but are lower for the beginning of the fourth year.

Although the number of black students who entered NCSU in 1970-72 is small (especially for females), retention rates for these students are higher than their white counterparts. Similar to white students, the retention rate for black females who continued into the fourth year dropped more than for black males. It will be of interest to determine whether the larger numbers of black freshmen who enrolled at NCSU in 1973 (N=60) and 1974 (N=145) continue to have high retention rates similar to those shown in Table 1.

This and many other questions about retention/attrition rates

will hopefully be answered as this system is completed and expanded.

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TABLE 1

NCSU NEW FRESHMAN RETENTION RATES
BY YEAR OF ENTRY, SEX, AND RACE

| Percentage who continued into year | White Males | | | Black Males | | |
|---|---|---|---|---|---|---|
| | 1970 | 1971 | 1972 | 1970 | 1971 | 1972 |
| | (N=1753) | (1744) | (1741) | (27) | (30) | (35) |
| 2 | 80.9 | 79.1 | 80.6 | 85.2 | 83.3 | 82.9 |
| 3 | 68.5 | 69.4 | | 81.5 | 76.7 | |
| 4 | 66.0 | | | 81.5 | | |
| 5 | | | | | | |
| 6 | | | | | | |

| | White Females | | | Black Females | | |
|---|---|---|---|---|---|---|
| | 1970 | 1971 | 1972 | 1970 | 1971 | 1972 |
| | (421) | (496) | (510) | (6) | (6) | (19) |
| 2 | 84.6 | 79.4 | 81.4 | 83.3 | 100.0 | 89.5 |
| 3 | 68.2 | 62.7 | | 83.3 | 100.0 | |
| 4 | 58.4 | | | 66.7 | | |
| 5 | | | | | | |
| 6 | | | | | | |

# THE UNOFFICIAL WITHDRAWAL

Norman P. Uhl

North Carolina Central University

The two studies just presented by Ed Chapman and Tom Stafford provide helpful suggestions for studying what I will refer to as "official withdrawals." Today I would like you to consider whether what I will call the "unofficial withdrawal" is also worth considering in attrition studies.

While an official withdrawal refers to those students who leave the campus prior to completion of their academic programs, an unofficial withdrawal refers to those students who are physically on the campus but who are participating only minimally in the intellectual activities, such as attending class, doing assignments, etc.

The presence of a large proportion of unofficial withdrawals would most likely adversely affect the intellectual climate of the campus. For this reason I think this is an important group to study, and since the reasons for their withdrawal probably greatly overlap the reasons for official withdrawals, it would probably be more economical to study the two groups together as part of a single attrition study.

How would you identify the unofficial withdrawal? While there is no problem in identifying the official withdrawal from the institution's records, this would not be true of the unofficial withdrawal. For the latter we probably would have to depend on the faculty. For example, the faculty might identify those students who cut their classes regularly and who also have less than a B average. Those students identified by more than one faculty member might be classified as unofficial withdrawals. (Our assumption is that these students are performing well below their capacity.) You might like to suggest additional ways of identification.

After identifying these "unofficial withdrawals" we do have one advantage that we don't have with the official withdrawals, and that is, they are still on campus. Therefore, we can interview them and identify the reasons for their withdrawal from academic activities. We might examine such variables as: (1) frequency and type of interaction with faculty, (2) outside work schedule, (3) finances, (4) physical health, (5) educational background, (6) participation in extracurricular activities, (7) adaption to the college environment (social as well as academic) and (8) the congruency between the student's expectations and perceptions of the institution.

I have yet to see an attrition study that considered "unofficial withdrawals." I present the concept because I think it may be

an interesting and useful concept in attrition studies. I would like to hear your reactions.

# A STUDY OF THE 1973 GRADUATION CLASS WITH SPECIAL EMPHASIS ON GRADUATION, RETENTION AND ATTRITION OF STUDENTS WHO ENROLLED AS NEW FRESHMEN IN THE FALL OF 1969 AT ELIZABETH CITY STATE UNIVERSITY

Jeff E. Smith

North Carolina Central University

This study, which is incomplete and still in process, was undertaken for several purposes. The major purpose was to determine how many of the 1973 graduates who enrolled as first-time or new freshmen in the fall 1969 completed academic requirements for graduation in eight semesters or four years.

## Major Findings

Of the 322 new freshmen who enrolled in the fall of 1969 at Elizabeth City State University, 178, or 55.3 percent, were among the 293 graduates of the 1973 class. An analysis of data relative to semesters of enrollment revealed that (1) 68, or 21.1 percent, completed their work in eight semesters without attending summer school; (2) 18, or 5.5 percent, completed their work in less than eight semesters by attending summer school, one session or more; and (3) 92, or 28.7 percent, completed their work in eight semesters by attending summer school, one session or more.

Of the 322 new freshmen who enrolled in the fall of 1969, 144, or 44.7 percent, did not graduate before or in 1973. In 1973-74, 27, or 8.4 percent, of these 322 students were still enrolled, but 21, or 6.5 percent, graduated in 1974 and six did not.

A comparison of this ECSU study with other studies shows that a higher percentage of these students completed their work in four years than was found in studies by other investigators. The Alexander W. Astin's national study of drop-outs in 1972 revealed that a lower percent of black students, 42.1 percent as compared to 55.3 percent in this study, received degrees in four years. His study also showed that 47.0 percent of the non-black students and 46.7 percent of all students in his sample received degrees in four years.

The NCCU study of 1968 new freshmen revealed that 43.0 percent graduated in four years, 42.0 percent dropped out, withdrew or were suspended, and 15.0 percent were continuing after eight semesters.

## Other Purposes of Study

A substantial amount of other data was collected relative to the 322 new freshmen who enrolled in the fall of 1969. The following data were collected relative to each student: (1) high school position in class and percentile rank, (2) GPA at the end of fresh-

man year and at graduation, (3) SAT scores, (4) NTE scores (if in a teacher education program), (5) major degree program, (6) honors (if any), and (7) geographical and socio-economic background. This information will be used for the purposes of determining the relationship between high school rank and grade-point average (GPA), (2) SAT and NTE scores, (3) SAT scores and GPA, (4) GPA and NTE scores, and (5) other factors.

This longitudinal study, which is scheduled for completion during the 1974-75 academic year, will contain (1) a detailed and in-depth description of the geographical background and characteristic of the cohort; (2) a description of the institution and its programs, policies and practices regarding academic eligibility standards; (3) an analysis and interpretation of (a) the sub-populations of the cohort, (b) correlations of data relating to specific factors as determined by Kendall's, Pearson's, and Spearman's statistical formulas, and (c) comparisons by sex, race, and major department; and (4) a summary of major findings and conclusions.

Data dealing with the 178 students who enrolled as new freshmen in the fall of 1969 and graduated in the spring of 1973 have already been computed and analyzed by The Universities Computation Center (TUCC).

An attempt will also be made to determine how many of the 322 students who enrolled as new freshmen in the fall of 1969 are enrolled for the first semester of 1974-75. If these students, a total of 123, are or are not currently enrolled, an effort will be made to determine how long they were enrolled before they withdrew, dropped out, transferred, were suspended, or were readmitted. For example, the semester and annual probation lists, suspension lists, withdrawal lists, and permanent records will be examined and analyzed in view of the institution's academic eligibility standards, policies and practices, to determine the specific reasons or causes for their failure to graduate in eight semesters.

# GRADUATE FOLLOW-UP STUDIES

* * * * *

## FOLLOW-UP STUDIES AT EAST CAROLINA UNIVERSITY

Robert M. Ussery

East Carolina University

Two major follow-up studies of graduates have been attempted at East Carolina University. One is a study of teacher education graduates of the Class of 1970. The other is a follow-up of all 1972 spring graduates from East Carolina University.

The follow-up of the Class of 1970 teacher education graduates was undertaken in part to comply with the National Council for Accrediting Teacher Education (NCATE) Standard 5.1 which requires that an "institution conduct a well-defined plan for evaluating the teachers it prepares." A survey instrument was prepared and was designed to serve as a preliminary device for the evaluation of teacher education graduates. The questionnaire contained four parts. Section I requested personal information from the respondent such as name, address, present position, certification, etc. Section II concerned the educational background of the respondent. Questions concerning the relevance of one's college experience to actual teaching experience were grouped together in Section III. Lastly, a self-rating sheet for the teachers to rate themselves on their respective traits and abilities as a professional teacher was contained in Section IV.

It was hoped that through such an instrument, East Carolina University might attempt to evaluate the teachers who had completed the teacher education program, as well as gain valuable "feedback" from them in order to possibly improve educational curricula for future teachers. It was decided that the survey would be implemented by the Office of Institutional Research with the assistance of the Student Teaching Office at East Carolina University.

A roster was obtained from the Registrar containing the names of teacher education majors who had graduated from East Carolina University in the Class of 1970. Each of these individuals were included in the survey population. The survey mailing was conducted in late Spring, 1972, with 759 survey instruments mailed. Approximately 20% of the instruments mailed were undeliverable and returned. It is assumed that incorrect addresses and the high mobility factor among graduates contributed to this situation. The number of usable replies was 362; constituting a return rate of 48% with respect to the total mailing, and a return rate of 60% with respect to the number of instruments assumed to be delivered.

The survey returns were analyzed and the data tabulated. The results are summarized in "A Report on a Survey of Teacher Education Graduates - Class of 1970" which is available from the Office of Institutional Research, East Carolina University.

The second major follow-up attempt was a 1974 follow-up of 1972 Spring graduates. In the Spring of 1972, the Office of Institutional Research at East Carolina University, in cooperation with the General Administration, surveyed its Spring graduates. In 1973, Art Padilla of General Administration conducted a follow-up survey of a random sample of the Spring 1972 graduates. In 1974, the Office of Institutional Research at East Carolina University, conducted a follow-up survey of the remainder of that population. The survey instrument was the same one used by Mr. Padilla. On January 12, 1974, 637 survey instruments were mailed. By March 29, 1974, 346 had been returned. There was a total of 67 undeliverable instruments returned. Of those questionnaires assumed deliverable, this gives a return rate of 61%. Preliminary analysis of responses has been conducted and further analysis is continuing.

# CATAWBA VALLEY TECHNICAL INSTITUTE FOLLOW-UP STUDY OF 1973 GRADUATES

Steve Lail

Catawba Valley Technical Institute

## INTRODUCTION

Catawba Valley Technical Institute annually conducts follow-up studies. The follow-up report is based upon data received from questionnaires returned by the 1973 graduates during January and February of 1974, some seven to nine months following graduation. This year the follow-up was conducted by the Developmental Studies And Research Co-ordinator at CVTI in collaboration with the Appalachian Consortium.

The four primary objectives of this study were to:

(1) Provide data regarding graduates' employment and salary.
(2) Provide graduates the opportunity to evaluate their educational experiences at CVTI.
(3) To determine any further need for job placement of the 1973 graduates.
(4) To gather information for the ten years operation report required by the Department of Community Colleges in Raleigh.

## RESULTS

In January of 1974, CVTI initiated the follow-up study by mailing questionnaires to 240 of the 1973 graduates. Of these, 192 questionnaires were returned. The statistical data provided in this report is based on the number of responses recorded per item within the questionnaire. This must be remembered when analyzing the results since the figures will vary per item. As can be observed, the study indicated the CVTI's 1973 graduates fared well in acquiring jobs and obtaining suitable salaries.

## RELATION OF JOB TO TRAINING

Of the 192 responses, 89% of the 1973 graduates indicated that they had found full-time positions upon graduation. Four percent of those were also either full-time or part-time students. Five percent of the 1973 respondents were employed part-time and three percent of those were either full-time or part-time students also.

Thirteen of the 22 curriculum major studies had 70 percent or more graduates employed in positions related to their training. Of these, Agricultural Business, Landscape Technician, Medical Secretarial, Electro-Mechanical, Furniture Production, Machine Shop,

and Practical Nursing had every graduate in jobs relating training to their major. Other programs relating training to placement are as follows:

| | |
|---|---|
| Recreational Grounds Management | 50% |
| Accounting | 64% |
| Business Administration | 60% |
| Data Processing | 80% |
| Executive Secretarial | 71% |
| Legal Secretarial | 50% |
| General Office | 67% |
| Traffic and Transportation | 50% |
| Architectural Drafting | 75% |
| Furniture Drafting | 25% |
| Mechanical Drafting | 80% |
| Electronics | 70% |
| Auto Mechanics | 70% |
| Electrical Installation | 67% |
| Industrial Engineering | 0% |

The importance of a CVTI education is further demonstrated by the fact that 83% of all the 1973 graduates stated that their jobs were directly related to their course of study at Catawba Valley Technical Institute.

In relation to this, 77% of the 181 respondents answered negatively to the question, "Are you employed outside your field of preparation?" The difference in the statistics provided for these two questions can most probably be explained by the wording of the questions. For example, a person who had majored in Electronics and acquired a position in Electromechanics may feel he has a job related to his major, yet still be employed outside his field of preparation. This seems to indicate that this class as a whole received training that fully prepared them for employment within their areas of interest. Also it provided another 8% with an educational background that enabled them to continue their education at a senior college or university.

## RELATION OF SALARY TO TRAINING

Based upon 161 responses, starting salaries were very good. The beginning weekly salary range was between $49.00 and $299.00. The average weekly salary for 1973 graduates was $130.55. This is approximately $17.50 above the weekly average salary of the 1972 graduate. As can be observed by the study, there is a broad range of salaries in most curriculums. This can be explained by the number of persons working only part-time, by each individual's capabilities, and by the entry level available at each business or industry. Also, it must be added that these are starting salaries. They do not reflect the long range salary potential.

The Average Weekly Salaries Chart (Appendix II) provides the

range and average in salaries for each of the 22 curriculums. Appendix III contains a chart of the comparison of salaries (1973) with three other graduating classes.

Programs having graduates with average weekly salaries above $150.00 were:

| | | |
|---|---|---|
| Industrial Engineering | $275.00 | (based on one response) |
| Recreational Grounds Management | $212.50 | |
| Furniture Production | $191.50 | |
| Mechanical Drafting | $187.00 | |
| Agricultural Business | $175.00 | (based on one response) |
| Traffic and Transportation | $175.00 | |
| Machine Shop | $175.00 | |
| Electronics | $169.00 | |
| Architectural Drafting | $156.00 | |
| Data Processing | $152.50 | |

The lowest beginning salary, $97.00 was in the Medical Secretarial Program. In perspective, three of the four lowest salaries were secretarial curriculums. Comparably the five curriculums having the lowest average beginning salaries were also those having a majority of, if not totally female graduates.

Those were:

Medical Secretarial
General Office
Executive Secretarial
Licensed Practical Nursing
Legal Secretarial

Average weekly salaries by Divisions were:

| | |
|---|---|
| Life Science | $127.43 |
| Business | $129.09 |
| Engineering | $152.03 |
| Furniture | $169.90 |

Curriculums that show the greatest increase in salaries compared to 1971-72 graduates were:

| | 1972-73 | 1971-72 |
|---|---|---|
| Agricultural Business | 175.00 | 111.00 |
| Recreational Grounds Mgmt. | 212.50 | 120.00 |
| Mechanical Drafting | 187.00 | 139.00 |
| Furniture Drafting | 137.50 | 96.00 |
| Furniture Production | 191.50 | 145.00 |
| Machine Shop | 175.00 | 116.00 |

There were no curriculums that decreased in salaries compared to 1971-72 graduates. This corresponds to the overall growth of

our area during 1973, the constant need of industry for trained individuals, and the general inflationary growth of the national economy.

## SUMMARY

The 1973 graduates of CVTI can be described as being very successful in obtaining employment. Statistics show that 95% of the 1973 graduates were either full-time employees, full-time students, or a combination of both. Also 83% of these persons found employment related to their training. Only 10% of the 1973 graduates requested further help from the placement office in locating employment at the time of the survey. Therefore, satisfaction with their jobs seems evident. Also 77% are employed within their field of preparation.

This is also very evident in observing beginning salaries as reported by 164 of the 240 graduates. Although there was a wide range from $49.00 to $299.00 per week, the average weekly salary for 1973 was $130.55. The higher average salaries were obtained by those completing the more technical and specialized programs. However, all curriculums did show an increase over the 1972 graduates. Of those in the Business Department, Traffic and Transportation again had the highest starting salary. Industrial Engineering led the school in total monies earned with Recreational Grounds Management placing second.

In conclusion, these statistics seem to indicate that each CVTI curriculum successfully prepared its students for employment and that the majority of the 1973 graduates are satisfied with their training and employment.

APPENDIX I

TOTAL SCHOOL

1. What are you doing at the present time?
   85% Employed full-time
   2% Employed part-time
   2% Employed full-time and full-time student
   2% Employed full-time and part-time student
   2% Full-time student and part-time employed
   1% Part-time student and part-time employed
   1% Full-time student
   5% Neither employed nor in school
   (192 responses)

2. Jobs held since graduation:
   AVERAGE: $130.55 RANGE: $49.00 - 299.00
   (161 responses)

3. Are you employed outside your field of preparation?
   23% Yes 77% No
   (181 responses)

4. Did the Personnel at this Institution help you find employment?
   28% Yes 72% No
   (185 responses)

5. If you are working, please check one of the following statements that indicates the relationship between your type of work and the courses you took at this Institution.
   83% My work is directly related to courses taken at CVTI.
   17% My work is not related to courses taken at this Institution.
   (180 responses)

6. Do you wish help from the School Placement Office in obtaining or changing jobs?
   10% Yes 90% No
   (162 responses)

## APPENDIX II

### AVERAGE WEEKLY SALARY: 1973 GRADUATES

| PROGRAM | AVERAGE 1971-72 | AVERAGE 1972-73 | 1972-73 RANGE | NO. OF RESPONSES 1972-73 |
|---|---|---|---|---|
| LIFE SCIENCE DIVISION: | - | 127.43 | (50-299) | 37 |
| Agricultural Business | 111.00 | 175.00 | (150-199) | 1 |
| Landscape Technician | 105.00 | 125.00 | (100-149) | 1 |
| Recreational Grounds | 120.00 | 212.00 | (150-299) | 4 |
| Practical Nursing | 96.00 | 115.00 | (50-249) | 31 |
| BUSINESS DIVISION: | 110.40 | 129.09 | (50-299) | 60 |
| Accounting | 107.00 | 125.00 | (50-199) | 10 |
| Business Administration | 131.00 | 142.50 | (49-249) | 20 |
| Data Processing | 116.00 | 152.50 | (100-299) | 9 |
| Executive Secretarial | 95.00 | 103.52 | (50-149) | 7 |
| General Office | 88.00 | 100.00 | (50-149) | 2 |
| Legal Secretarial | 88.50 | 125.00 | (100-149) | 1 |
| Medical Secretarial | 93.75 | 97.00 | (50-149) | 9 |
| Traffic & Transportation | 164.00 | 175.00 | (50-199) | 2 |
| ENGINEERING DIVISION: | - | 152.03 | (50-299) | 57 |
| Architectural Drafting | 129.00 | 156.00 | (100-199) | 8 |
| Electromechanical | 120.00 | 125.00 | 100-149) | 1 |
| Electronics | 136.00 | 169.00 | (50-299) | 9 |
| Mechanical Drafting | 128.00 | 187.00 | (150-249) | 4 |
| Industrial Engineering | - | 275.00 | (250-299) | 1 |
| Auto Mechanics | 107.00 | 135.00 | (50-299) | 20 |
| Electrical Installation | - | 138.50 | (50-199) | 11 |
| Machine Shop | 116.00 | 175.00 | (100-299) | 3 |
| FURNITURE DIVISION: | 120.00 | 169.90 | (100-299) | 10 |
| Furniture Drafting | 96.00 | 137.50 | (100-199) | 4 |
| Furniture Production | 145.00 | 191.00 | (100-299) | 6 |
| TOTAL SCHOOL AVERAGE | 113.50 | 130.50 | (50-299) | 164 |

APPENDIX III

COMPARISON OF SALARIES (per week)

| PROGRAM | 1969-70 | 1970-71 | 1971-72 | 1972-73 |
|---|---|---|---|---|
| Accounting | $ 93.00 | $ 93 00 | $107.00 | $125.00 |
| Agricultural Business | 96.00 | 117.00 | 111.00 | 175.00 |
| Architectural Drafting | 106.00 | 111.62 | 129.00 | 156.00 |
| Automotive Mechanics | 96.00 | 99.70 | 107.00 | 135.00 |
| Business Administration | 105.00 | 107.00 | 131.00 | 142.50 |
| Data Processing | 93.00 | 99.03 | 116.00 | 152.50 |
| Electrical Installation | 117.25 | 115.20 | 000.00 | 138.50 |
| Electromechanical | 90.00 | 140.00 | 120.00 | 125.00 |
| Electronics | 98.40 | 133.96 | 136.00 | 169.00 |
| Executive Secretarial | 86.00 | 84.25 | 95.00 | 103.52 |
| Furniture Drafting | 121.00 | 110.00 | 96.00 | 137.50 |
| Furniture Production | 125.00 | 114.50 | 145.00 | 191.50 |
| General Office | 75.00 | 74.83 | 88.00 | 100.00 |
| Legal Secretarial | 00.00 | 80.00 | 88.00 | 125.00 |
| Machine Shop | 87.00 | 104.80 | 116.00 | 175.00 |
| Mechanical Drafting | 140.00 | 128.08 | 139.00 | 187.00 |
| Medical Secretarial | 82.00 | 80.94 | 93.75 | 97.00 |
| Ornamental Horticulture | 80.00 | 101.20 | 105.00 | 125.00 |
| Practical Nursing | 86.00 | 90.76 | 96.00 | 115.00 |
| Recreational Grounds Mng. | 00.00 | 00.00 | 120.00 | 212.50 |
| Traffic & Transportation | 99.00 | 127.44 | 164.00 | 175.00 |
| TOTAL SCHOOL | 97.75 | 102.09 | 113.05 | 130.55 |

SPECIAL INTEREST GROUP STUDIES

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# NCHEMS COSTING AND DATA MANAGEMENT SYSTEMS AS AN INFORMATION EXCHANGE PROCEDURE: IMPLEMENTATION at TWO INSTITUTIONS

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## SYNOPSIS

Institutions of higher education exchange data because funding agencies require them to do so and because they find it useful. This usefulness is manifest in resource acquisition, resource allocation, and in internal management. Three criteria must be met for the exchange of comparable information between institutions. The basic data elements must be (a) uniformly defined, (b) arrayed in a common structure and (c) aggregated, organized, and calculated in a similar manner.

The initial effort at servicing the need for a means of institutions exchanging comparable management information was made by NCHEMS in 1973. Approximately 70 institutions utilized the Resource Requirements Prediction Model 1.6 as a means for producing this comparable information; however, significant difficulties were encountered in this approach.

Currently under way is the 1974 NCHEMS Information Exchange Procedures Field Test which utilizes the "NCHEMS Costing and Data Management System." This system is intended to be NCHEMS' primary set of computer software for the analysis of historical institutional activities and cost. In conjunction with this system, the Information Exchange Procedures project utilizes a detailed set of measures, a common structure (The Program Classification Structure) and a fixed procedure for the production of comparable management information. The NCHEMS Costing and Data Management System is composed of five modules each of which provide both reports which are of value in themselves and data to drive other modules in the system. The Student Data Module is designed to summarize student registration data. The Faculty Activity Module creates a machine readable file that is the result of a faculty activity survey. This module prepares faculty effort distribution data which are communicated to the Personnel Data Module. The Personnel Data Module is an analytical tool for distributing personnel units and compensation across an institutional activity structure. In addition to these modules, the Account Crossover Module is designed to crossover an institution's general ledger of accounts to a previously designed activity structure. The final module in the system is the Data Management Module. This module serves as a data filing structure for infor-

mation communicated from the other modules and a calculation tool that provides such information as directed. Bluefield State College has approximately 60% completed its Information Exchange Procedures project.

The NCHEMS Costing and Data Management System is recommended strongly for implementation if an institution has not conducted previous cost and productivity studies, and if 50K of computer core is readily available. The NCHEMS system represents the easiest manner for producing such management information with the added benefits of information comparability and the establishment of the data base for simulation modeling.

# IMPLEMENTING NCHEMS INFORMATION EXCHANGE PROCEDURES AT NORTH CAROLINA A & T STATE UNIVERSITY

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Knowledge of what is available and how it is being used is not a new phenomenon. Men of old were concerned with records of possessions (an inventory) and plotting trends that the inventory made in its dispersion. These records were indicative of work done and gave inferences about potential patterns that the work might take. Therefore, if the wet-head is dead so is the "cash register" approach of operating an institution fading into oblivion. "Wanted" as an accomplice in the death of the "cash register" approach is IEP (Information Exchange Procedures).

The true value of IEP to A & T is yet to be realized because of the limited breadth and depth of implementation, but we have experienced and are experiencing some problems, and several tertiary benefits from IEP.

North Carolina A & T State University has attempted to determine its departmental costs by the NCHEMS procedures. With some adaptations for our institutional idiosyncrasies, we produced some crude departmental cost figures that were reasonably well accepted by school deans when they (the figures) were presented at a special meeting. We did experience manual manipulations, but they were expected, and we are searching for methods by which these figures may be refined.

Yet for the doubting Thomases the tertiary benefits are justifications enough for employing systematic and scientific analyses, such as IEP, for understanding the operational procedures at your institution. For examples, we now know that: (1.) the data generated is helpful with space utilization, and (2.) a functional and structural exchange bridge is needed between fiscal affairs, student affairs and the computer center. In short, implementating NCHEM Information Exchange Procedures requires an internal look at one's institutional operations.

# A TECHNIQUE FOR IDENTIFYING DISPARITIES IN FACULTY SALARIES

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North Carolina Central University

Equal Employment Opportunity (EEO) guidelines for colleges and universities have included requirements for analyses of possible salary differentials related to discriminatory factors such as sex, race, and/or religion. A number of procedures have been used to carry out these required analyses. For example, in a recent article in College Management (April, 1974), Raymond Kieft described a statistical procedure (regression analysis) he used to determine whether variances in faculty salaries at a particular institution were related to discriminatory factors such as sex or race. Using procedures such as regression analysis or simply computation of mean salaries by group, salary inequities related to sex, race, and/or other factors have been revealed for a number of institutions. Under EEO guidelines, when salary inequities are identified, affirmative action plans and remedial programs must be developed to eliminate the discriminatory conditions. The plans and programs must include specific goals, procedures, timetables, auditing systems, and evaluation.

The present article describes an extension of the regression analysis procedure which may be used for identifying specific individuals whose salaries are disparate from other faculty members of comparable rank, educational background, and years of service. Identification of such disparities is of course one essential step in the process of remedying salary inequities. The article includes an illustrative application of the procedure used at North Carolina Central University (NCCU) as one basis for adjusting salaries of regular faculty members who were paid less than colleagues of comparable rank and experience levels.

The procedure operated by computing a "projected salary" for each faculty member, using a regression formula. The salary projections were based on highest earned degree, rank, length of service at the institution, length of service in rank, and academic discipline. Accordingly, the projected salary for each given faculty member may be thought of as the average salary for all persons of comparable degree level, rank, and discipline, adjusted upwards or downwards to take into account length of service.

Projected salaries were calculated for all faculty members, separately within each rank. The projected salary for each individual was compared with the actual salary and the difference between the two figures was calculated. Individuals with salaries substantially below the projections were identified as having a "salary deficit." Table A shows illustrative data for 8 (fictitious) assistant professors, i.e. approximately fifteen percent of

the assistant professors with the largest deficits. Comparable tables were prepared to identify faculty with the largest deficits within each rank. The data were presented in a special report to the Director of Affirmative Action and the Chancellor.

Actually, as is shown in the Table, two kinds of deficits were computed. The "Overall Deficit" was based on comparison of the individual's salary with salaries of all other faculty at the same rank. The "Deficit in Discipline" was based only on comparison with other faculty at the same rank in the same discipline. Depending on institutional policies and practices, this permits adjustments for interdisciplinary or interdepartmental differences, such as supply and demand factors which might affect salary levels differentially for various disciplines.

The faculty members identified with this procedure were marked for "special consideration" in the salary review process. A preliminary review indicated that a variety of factors apparently operated to produce deficits. Among these factors were unique administrative or budgetary circumstances, such as a limited salary in a given budgeted slot, or a lag in salary increments following recent completion of a new degree. Another factor which operated to produce deficits reflected deliberate appraisals of the faculty member's performance, productivity, and/or effectiveness, i.e. the salary deficit simply reflected the results of judgments concerning the merit of the individual's performance. On the other hand, some of the deficits could not be accounted for by any known factors, and since this was the case for females more frequently than for males, it appeared that inadvertent sex discrimination may have been operating. Accordingly, the review process indicated that some, but not all, of the identified instances of salary deficits warranted adjustments.

A number of observations and suggestions may be offered to administrators who wish to consider utilizing the procedure. The procedure is relatively inexpensive, simple, and easily implemented if the institution maintains a machine processable file of faculty data and has access to a general purpose multiple regression computer program. An institutional research officer or statistician should be able to provide the necessary technical consultation and/or services.

The computer program used in the application at NCCU was the Regression Procedure of the Statistical Analysis System (SAS) on the IBM 370 Model 165 at the Triangle Universities Computer Center (TUCC). With the SAS Regression Procedure the regression analyses, salary projections, and listings of pertinent identifying information (e.g. name, sex, rank, etc.) for each faculty member can be completed in a single step. With other statistical packages such as Statistical Programs for the Social Sciences (SPSS), two or three computational steps may be necessary.

In addition to the data elements included in this application, other applications might include additional measures of salary-related factors such as merit ratings, measures of productivity or effectiveness, adjustments for level of responsibility, adjustments for supply and demand factors in the market place, etc.

Although the purpose of this demonstration procedure was to identify possible deficits in salaries, the program could be used to identify other disparities, e. g. faculty who are receiving pay substantially above the projected levels. Thus a review process might be undertaken to evaluate whether the faculty with the highest salaries (adjusted for length of service) were actually those who were assuming the greatest responsibility and/or contributing most to the institution.

In conclusion, regression analyses of factors related to salary variation, as well as the present procedure for analyzing deficits, should be conducted with a basic understanding of the assumptions and implications of the statistical procedures. It is just as essential that the analyses proceed only with a full understanding of the institution's policies and procedures for determining salaries. With these understandings the procedures discussed herein can lend greater objectivity, systematization, and fairness to the salary determination process.

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Robert Williams, Jr., Assistant Vice President for Academic Affairs, University of North Carolina-General Administration, Chapel Hill, p. 5

Table A

Fifteen Percent of Assistant Professors with Largest Salary Deficits[1]

Total Number in Comparison Group = 55
Mean Salary = $12,031
Standard Deviation = $1,846

| Name | Race | Sex | Discipline | Date of Initial Appointment | Appointment to current rank | Current Salary | Projected Salary | Overall Deficit | Deficit in Discipline |
|---|---|---|---|---|---|---|---|---|---|
| John Adams | B | M | Humanities | 1952 | 1952 | $11,875 | $13,522 | $-1,597 | $-1,352 |
| Mary Brown | B | F | Science | 1965 | 1968 | 10,800 | 11,886 | -1,086 | - 869 |
| Sam Cooper | W | M | Business | 1972 | 1972 | 9,950 | 11,180 | -1,230 | - 889 |
| Jack Doe | B | M | Social Science | 1968 | 1973 | 10,150 | 11,512 | -1,362 | - 976 |
| Charles Jones | B | M | Social Science | 1965 | 1967 | 10,800 | 11,908 | -1,108 | - 722 |
| Susan Lang | W | F | Humanities | 1963 | 1964 | 11,900 | 13,150 | -1,250 | - 860 |
| Carol Miller | B | F | Education | 1970 | 1971 | 11,100 | 11,399 | - 279 | -1,136 |
| Ellen Smith | W | F | Humanities | 1960 | 1968 | 11,400 | 12,328 | - 928 | -1,169 |

[1]Fictitious names and identifying characteristics are presented to conceal the identity of individuals.